

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Attorney Docket No. P02083US1A; 295620-214164

Group Art Unit:	1713	)	
		)	
Examiner:	Harlan	)	
		)	
Inventor:	Wang, et al.	)	
		)	<b>PRE-APPEAL BRIEF</b>
Serial No.:	10/791,177	)	<b>CONFERENCE REQUEST</b>
		)	
Filed:	March 2, 2004	)	
		)	
For:	Rubber Composition Containing	)	
	Functionalized Polymer	)	
	Nanoparticles	)	

Sir:

The Examiner has finally rejected claims 1-4 and 6-9 as being unpatentable under 35 U.S.C. §102. The rejections of these claims are now appealed. Applicant hereby requests review of the Final Rejection prior to filing an appeal brief for the reasons set forth below. Any fees due should be charged to Deposit Account No. 060925, ref: P02083US1A.

**The 35 U.S.C. § 102 Rejection of Claims 1-4 and 6-9 over Krom is Clearly Erroneous**

In the Final Office Action, claims 1-4 and 6-9 were rejected under 35 U.S.C. § 102(b) over U.S. Pat. No. 6,437,050 to Krom. The Office Action is clearly erroneous in that the 1,2 microstructure control agents of Krom do not serve to functionalize a nanoparticle, and thus do not meet the claim limitation of “at least one functional group associated with the outer layer.”

The Final Office Action cites to column 4, lines 34-63 of Krom as teaching a functionalized nanoparticle. This passage of Krom deals with 1,2 microstructure control agents that are used to control where the double bond is located on diene polymers. As explained in the Response to the First Office Action these microstructure control agents do not functionalize a nanoparticle, they only make the formation of certain microstructures more favorable. Any microstructure control agent used to make the polymers that are formed into the nanoparticle have a double bond in a certain location is washed away and not present at all in the nanoparticle.

Despite Applicants arguments to the contrary, in the Final Office Action, the Examiner maintained that Krom teaches a functional group associated with the outer layers of the nanoparticle. The Examiner provided no reasoning in reply to Applicants arguments, but merely stated that the arguments were not persuasive. The Examiner provided no support for his position.

In Applicants response to the Final Office Action, Applicants submitted a declaration under 37 C.F.R. § 1.132 by an expert in the field<sup>1</sup> explaining how 1,2 microstructure control

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<sup>1</sup> The declarant was Mr. Dan Graves who is employed by the assignee of the application but is not an inventor  
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agents work, citing to a reputable published source “Advances in Polymer Science,” and concluding that the such agents would not functionalize a nanoparticle. Despite this, an Advisory Action was issued merely stating that Applicants arguments and declaration were not convincing.

The Examiner’s allegation that microstructure control agents functionalize the polymers to which they are applied is unsupported by any evidence. Such a bare assertion cannot stand, especially in light of all the evidence Applicants have produced in reply. See, e.g., MPEP § 2144.03(A) (“[A]ssertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art. *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21. See also *In re Grose*, 592 F.2d 1161, 1167-68, 201 USPQ 57, 63 (CCPA 1979) (‘[W]hen the PTO seeks to rely upon a chemical theory, in establishing a prima facie case of obviousness, it must provide evidentiary support for the existence and meaning of that theory.’)). With the submission of the declaration and attached supporting publication, the only evidence of record contradicts the Examiner’s unsupported allegations. Thus, the Final Office Action is clearly erroneous and should be withdrawn.

In addition, nothing else in the cited reference, Krom, meets the claim limitation “at least one functional group associated with the outer layer,” and claims 1-4 and 6-9 are neither anticipated nor made obvious by Krom. Though, as the Examiner mentioned in an interview after final, Krom discloses that the nanoparticle may be utilized in a rubber matrix, it is not reasonable to interpret the term “functional group” to include a rubber polymer.

First, those of ordinary skill in the art would not consider a rubber polymer to be a “functional group.” The IUPAC Compendium of Chemical Technology, 2<sup>nd</sup> Edition (1997) defines a functional group as follows:

Organic compounds are thought of as consisting of a relatively unreactive backbone, for example a chain of sp<sup>3</sup> hybridized carbon atoms, and one or several functional groups. The functional group is an atom, or a group of atoms that has similar chemical properties whenever it occurs in different compounds. It defines the characteristic physical and chemical properties of families of organic compounds.

The definition does not apply to a rubber polymer. A rubber polymer is typically like the relatively unreactive backbone mentioned in the definition, *i.e.* it is an “organic compound,” not a “functional group.” In addition, a rubber polymer is not an atom and not really a group of atoms as one of skill in the art would understand that term, but it is a large group of repeat monomer units. Thus, it is clear that the given definition does not apply to a rubber polymer, and reading the term “functional group” to include a rubber polymer is unreasonably too broad.

In particular, in this case, where a nanoparticle is comprised of polymeric chains, a rubber polymer bonded to the nanoparticle would just be an extension of one of the polymer chains of the nanoparticle. In effect, it would just produce an extension of the polymer chain. A person of ordinary skill in the art would clearly not consider a rubber matrix to be a functional group to the nanoparticle of the current claims.

For the foregoing reasons, Applicants respectfully submit that the Final Office Action is clearly erroneous and that claims 1-9 are in condition for allowance.

Respectfully submitted,

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